

Magic Rescue

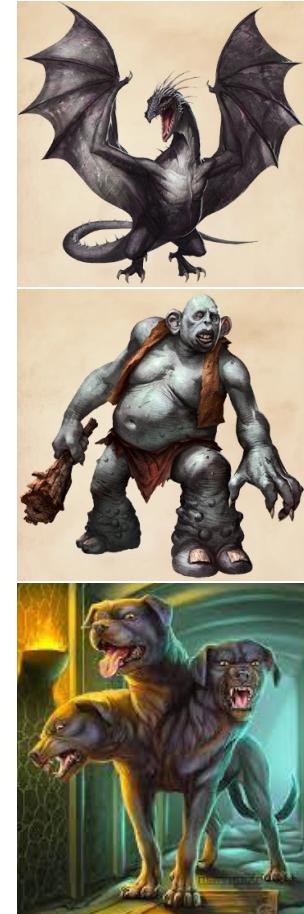
Harry and Ron must as quickly as possible save Hermione, who has been kidnapped by followers of the Dark Lord. They have a long way to go, where there are *creatures* that can kill them: *dragons, trolls and three-headed dogs*. Fortunately, Professor Dumbledore's phoenix gave them invaluable assistance, leaving several *objects* scattered along the way. These objects are *cloaks, potions and harps*.

The route is a sequence of *plots* (or *fields*). Each plot has a single creature or none. Objects are found in plots that do not have any creature, called *easy-plots*. Each easy-plot has a single object or none. At any moment, the two wizards can carry at most one object. When they arrive at an easy-plot, they can keep or drop the object with which they entered the field (if they entered with an object) and they can ignore or catch the object that is in the field (if there is any), as long as they never carry more than one object at the same time.

It takes Harry and Ron one time unit to cross an easy-plot, if they enter and exit the plot with no object. Time goes up one unit if they enter (respectively, if they leave) the field with an object. Therefore, it may take one, two or three time units to cross an easy-plot.

Harps allow them to cope only with three-headed dogs, which fall asleep to the sound of music. As any louder noise nullifies the effect of the harp, it takes Harry and Ron four time units to cross a plot where there is a three-headed dog with a harp.

With a potion, it is possible to cross a plot where there is a troll or a three-headed dog. As the effect of the potion, which is to stun the creature, takes some time to reach, Harry and Ron take five time units to cross a plot where there is a troll or a three-headed dog with a potion.



With an invisibility cloak, Harry and Ron can cross a plot that has any of the three creatures (dragon, troll or three-headed dog). But, being two under the cloak, they have to walk very slowly, taking six time units to traverse the plot.

Task

Write a program that, given the route (the number of plots and what is in each of them), computes the minimum number of time units Harry and Ron need to traverse it. It is guaranteed that, for the given inputs, they can reach the end of the path and save Hermione.

Input

On the input first line there is an integer, T , which is the number of test cases. T lines follow, each with a sequence of characters of length

L_i , which describes the route in the i^{th} test case (for every $i = 1, \dots, T$). Each character indicates what is in the corresponding plot:

- e (An easy-plot without object)
- h (An easy-plot with a harp)
- p (An easy-plot with a potion)
- c (An easy-plot with a cloak)
- 3 (A plot with a three-headed dog)
- t (A plot with a troll)
- d (A plot with a dragon)

Constraints

$1 \leq T \leq 50$ Number of test cases

$1 \leq L_i \leq 100\,000$ Length of a route (for $i = 1, \dots, T$)

Output

The output consists of T lines, each with a single integer, x_i , which denotes the minimum number of time units Harry and Ron need to traverse the route defined in the i^{th} test case.

Sample Input

```
2
peeecttdhp3e
ecedeeeeedee
```

Sample Output

```
34
39
```

Sample Explanation



In the first test case, whose route is depicted above, Harry and Ron need 34 time units to cross the eleven plots. They do it ignoring the first potion, picking the cloak and using it to cope with the trolls and the dragon, dropping the cloak (and ignoring the harp) on the eighth plot, taking the second potion and leaving it on the last plot. The time spent to traverse the route in this way is: $1 + 1 + 1 + 2 + 6 + 6 + 6 + 2 + 2 + 5 + 2 = 34$.

In the second test case, illustrated below, the fastest way to traverse the route is to take the cloak and leave it on the penultimate plot, which takes $1 + 2 + 3 + 6 + 6 \times 3 + 6 + 2 + 1 = 39$ units of time.

